WHAT IS CLAIMED IS:

1. A method for chemical milling of a gas turbine engine blisk having a hub and a plurality of blades made of metal spaced circumferentially around the hub and extending radially outwardly therefrom, each of the blades of the blisk having a leading edge, a trailing edge, a chord defined by a line extending from the leading to the trailing edge, a convex curved surface, a concave curved surface and a thickness defined between the convex and the concave surfaces, the method comprising the step of treating at least one blade of the blisk with a chemical etchant of the metal that the at least one blade is made of for a period of time sufficient to change the at least one of the chord and thickness.

2. The method of claim 1 wherein the chemical etchant is an aqueous etchant solution comprising at least one strong acid.

3. The method of claim 2 wherein the strong acid is selected from the group consisting of hydrofluoric acid, nitric acid, hydrochloric acid, sulfuric acid, and mixtures thereof.

4. The method of claim 2 wherein the treating step comprises immersing the at least one blade to be treated in the solution.

5. The method of claim 4 wherein the treating step comprises immersing at least two blades of the blisk in the solution, the at least two blades of the blisk including the at least one blade to be treated with the solution and at least one blade not to be treated with the solution, and which comprises the further step of applying to the surfaces that are potentially in contact with the solution of the at least one blade that is not to be treated with the solution a maskant that is chemically resistant to the solution, the maskant being applied to the surfaces prior to immersion of the at least two blades of the blisk in the solution.

6. The method of claim 5 wherein the maskant is a material selected from the group consisting of plastic films and coatings.

7. The method of claim 5 which further comprises the subsequent steps of removing the maskant from the surfaces of at least one untreated blade and after removal of the maskant, immersing the at least two blades of the blisk in the solution for a period time sufficient to change at least one of the chord and thickness of the at least one blade from which the maskant has been removed.

8. The method of claim 4 wherein a reference panel made of the same metal as the at least one blade to be treated is immersed in the solution to monitor at least one of the degree of change in the at least one of the chord and thickness and the degree of hydrogen absorption by the metal.

9. A method for rotationally balancing a gas turbine engine blisk that is rotationally imbalanced, the blisk having a hub and a plurality of blades made of metal spaced circumferentially around the hub and extending radially outwardly therefrom, wherein each of the blades of the blisk has a leading edge, a trailing edge, a chord defined by a line extending from the leading to the trailing edge, a convex curved surface, a concave curved surface and a thickness defined between the convex and the concave surfaces, the method comprising the steps of:

(a) evaluating the rotationally imbalanced blisk to determine the direction and magnitude of the rotational imbalance;

(b) identifying at least one blade of the rotationally imbalanced blisk for potential treatment with a chemical etchant to correct the rotational imbalance of the blisk;

(c) determining which of the at least one blade should be treated with the chemical etchant to correct the rotational imbalance of the blisk; and

(d) selectively treating the determined at least one blade of the blisk with a chemical etchant of the metal that the at least one blade is made of for

a period of time sufficient to change the at least one of the chord and thickness until the blisk is believed to be rotationally balanced.

10. The method of claim 9 which comprises the further steps of:

(e) determining after step (d) whether the blisk is rotationally balanced; and

(f) if the blisk is determined not to be rotationally balanced after step (e), repeating one or more of steps (a) through (d) until the blisk is rotationally balanced.

11. The method of claim 9 wherein the chemical etchant is an aqueous etchant solution comprising at least one strong acid.

12. The method of claim 11 wherein the strong acid is selected from the group consisting of hydrofluoric acid, nitric acid, hydrochloric acid, sulfuric acid, and mixtures thereof.

13. The method of claim 9 wherein treating step (d) comprises immersing the at least one blade to be treated in the solution.

14. The method of claim 13 wherein treating step (d) comprises immersing at least two blades of the blisk in the solution, the at least two blades of the blisk including the at least one blade to be treated with the solution and at least one blade not to be treated with the solution, and which comprises the further step of applying to the surfaces that are potentially in contact with the solution of the at least one blade that is not to be treated with the solution a maskant that is chemically resistant to the solution, the maskant being applied to the surfaces prior to immersion of the at least two blades of the blisk in the solution.

15. The method of claim 14 wherein the maskant is a material selected from the group consisting of plastic films and coatings.

16. The method of claim 15 wherein treating step (d) further comprises the subsequent steps of removing the maskant from the surfaces of at least one untreated blade and after removal of the maskant, immersing the at least two blades of the blisk in the solution for a period time sufficient to change at least one of the chord and thickness of the at least one blade from which the maskant has been removed, the subsequent steps being repeated until the blisk is rotationally balanced.

17. The method of claim 11 wherein treating step (d) comprises selectively immersing in the solution solely the at least one blade to be treated until the blisk is rotationally balanced.

18. The method of claim 11 wherein a reference panel made of the same metal as the at least one blade to be treated is immersed in the solution to monitor the degree of change in the at least one of the chord and thickness.

19. The method of claim 18 wherein the metal is selected from the group consisting of titanium, steel, nickel, tungsten and alloys thereof.

20. The method of claim 18 wherein the reference panel is reduced in thickness during treating step (d), and wherein the reduction in thickness of the reference panel is used to predict whether the treated blisk is balanced.